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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,264	11/26/2001	Gary Edward Pawlas	35015.003	8615
32827	7590	08/10/2004	EXAMINER	
DUFT SETTER OLLILA & BORNSSEN LLC			MAKL STEVEN D	
2060 BROADWAY			ART UNIT	
SUITE 300			PAPER NUMBER	
BOULDER, CO 80302			1733	

DATE MAILED: 08/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/994,264

Applicant(s)

PAWLAS ET AL.

Examiner

Steven D. Maki

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 73-90 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 73-90 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

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- 1) The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- 2) Claims 78-81 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 78-81 are indefinite because the meets and bounds of the providing steps is unclear. In particular, it is unclear which steps are used and required in the described providing steps. Examples: Claim 78 describes that "the section of flow tube between the two legs is held in an essentially straight configuration by providing a fixture block" (emphasis added). It is unclear if claim 78 requires a method step of arranging the section of flow tube between the first section and second section of the fixture block and fitting the fixture block between the first leg and second leg of the base. If not, then it is unclear how the *mere providing* of a fixture block results in the *claimed holding*. Claims 79 and 80 describe "driver opening" and "pick-off opening". It is unclear if this description requires the claimed flow meter to have a driver and pick off and/or use of the openings. As to claim 80, it is unclear if the claimed method requires a steps of fitting the alignment means in the openings. As to claim 81, it is unclear if a securing step is being claimed. If a fitting step / securing step is not being claimed, then the relationship of the providing steps of claims 80 / 81 and the steps of method claim 73 is unclear.

- 3) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

introduce adhesive into gap using perpendicular opening

4) **Claims 73-74 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiyama et al (US 5307689) in view of Lanham et al (WO 01/65213) or Gomi et al (EP 997709) and in view of Japan '877 (JP 60-112877) and Storick (WO 95/06562).**

Nishiyama et al discloses manufacturing a flow meter having a tube (flow tube) 5, a vibrators (drivers) 6a, 6b for the tube and pickups (pick offs) 7a-7d comprising providing a support base (base) 3, manifold (leg) 9 having a tube opening and support part (leg) 10 having a tube opening; inserting the flow tube into the tube openings of the legs and fixing the tube to the legs by welding. Nishiyama et al does not recite fixing by using an adhesive.

As to claim 73, it would have been obvious to one of ordinary skill in the art to fix the tube 5 of the flow meter in the openings of the parallel legs 9, 10 by using adhesive instead of welding in view of the suggestion from Lanham et al or Gomi et al to use adhesive to attach components of a Coriolis flow meter together. Lanham et al, directed to manufacturing a flow meter having a driver and pick offs, suggests fixing using an adhesive instead of welding / brazing during manufacture of a flow meter so as to avoid microscopic cracks and thermal stresses generated by a brazing operation. See page 1 line 21 to page 2 line 6, page 3 lines 19-20, page 17 lines 1-6. Gomi et al teaches attaching flow tube 4 and outer tube 5 at both ends by either welding or adhesive

bonding. See col. 5 paragraphs 19 and 20. Gomi therefore instructs one of ordinary skill in the Coriolis flow meter art to use adhesive instead of welding to attach a flow tube to another component of a Coriolis flow meter. Lanham et al and Gomi are silent as to the details of the adhesive bonding. However, it would have been obvious to one of ordinary skill in the art to carry out the adhesive bonding suggested by Lanham et al or Gomi by injecting adhesive in an opening of each leg (this opening intersecting the above mentioned tube opening) so as introduce adhesive in each gap and thereby adhere the tube to the opening in each leg since bonding parts by introducing adhesive in a gap by injecting adhesive through an opening in one part *so as to introduce a proper amount (neither too little or too much) of adhesive* between the parts is a well known adhesive bonding technique as evidenced by Japan '877 and Storwick. Japan '877 and Storwick both teach that a proper amount of adhesive is used by injecting adhesive. Japan '877 adds that bond strength is improved 10-30%. Japan '877 and Storwick both teach that this injecting adhesive technique is suitable for bonding a tube to another part. The motivation (avoiding thermal stress caused by the high temperature used in brazing / using adhesive as an alternative to welding to obtain the desired attachment) to use adhesive to bond the tube to another part (the leg) in Nishiyama et al and to look to the bonding art (e.g. Japan '877 and Storwick) comes from Lanham et al or Gomi et al.

As to claim 77, it would have been obvious to hold the section of the flow tube between the two legs in an essentially straight configuration since Nishiyama et al

teaches configuring the flow tube so as to extend straight between the legs as illustrated in figure 1.

5) **Claims 75-76 and 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiyama et al in view of Lanham et al or Gomi et al and in view of Japan '877 and Storick as applied above and further in view of Adhesives Technology Handbook and optionally van der Pol (US 6336370).**

As to claims 75-76, it would have been obvious to pretreat as claimed (i.e. etch flow tube as in claim 75 / etch flow tube with sodium naphthalene as in claim 76) since Adhesives Technology Handbook suggests surface pretreating the surfaces to ensure successful bonding wherein surface pretreatment techniques include chemical treatment such as etching / treating with acetone and sodium naphthalene (page 87). Adhesives Technology Handbook teaches preparing surface of PFA using sodium naphthalene. Although not required by claims 75-76, it would have been obvious to use PFA for Nishiyama et al's flow tube since van der Pol teaches that PFA may be used instead of metal for a flow tube in a flow meter (col. 4 lines 30-34).

As to claim 84, it would have been obvious to use cyanoacrylate adhesive since Adhesives Technology Handbook discloses cyanoacrylate adhesives as forming a strong bond between many materials without the need for heat (page 141).

6) **Claims 82 and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiyama et al in view of in view of Lanham et al or Gomi et al and in view of Japan '877 and Storick and as applied above and further of Van der Pol.**

As to claims 82 and 83, it would have been obvious to one of ordinary skill in the art to use PTFE or PFA for Nishiyama et al's flow tube since Van der Pol suggests using PTFE or PFA as an alternative to metal for a flow tube of a Coriolis mass flow meter.

7) **Claims 85-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiyama et al in view of Lanham et al or Gomi et al and in view of Japan '877 and Storick and as applied above and further of Cage '827 (US 5753827).**

As to claims 85-87, it would have been obvious to one of ordinary skill in the art to align and attach the driver and pickoff to the tube in Nishiyama et al's Coriolis flow meter using adhesive since (1) Nishiyama teaches arranging the driver and pickoff on the flow tube and (2) Cage '827, also directed to a Coriolis flow meter, suggests attaching such components on the tube using adhesive (col. 7 lines 20-50).

8) **Claims 88 and 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiyama et al in view of in view of Lanham et al or Gomi et al and in view of Japan '877, Storick and Cage '827 and as applied above and further of Cage '060 (US 6439060).**

As to claims 88 and 89, it would have been obvious to one of ordinary skill in the art to test as claimed in view of Cage '060's suggestion to test a Coriolis flow meter by a process including vibrating the flow meter, measuring the vibration and adjusting masses so as to balance the flow meter.

9) **Claim 90 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiyama et al in view of in view of Lanham et al or Gomi et al and in view of**

Japan '877 and Storick and as applied above and further of Japan '709 (JP 5-26709) and McLaughlin (US 3352960).

As to claim 90, it would have been obvious to one of ordinary skill in the art to use a plastic tube as the flow tube in Nishiyama et al and manufacture the plastic flow tube as claimed in view of (1) Japan '709's suggestion to use a plastic flow tube in a Coriolis flow meter (this plastic tube like the tube in Nishiyama et al being bent), (2) McLaughlin's teaching to extrude a straight tube and then heat and bend the straight tube to form a bent plastic tube and (3) it is taken as well known / conventional per se in the extrusion art to pass an extruded tube through a cooling region while holding the tube, for example with pair(s) of rollers, so as to form a straight plastic tube.

introducing adhesive directly in each gap and using fixture

10) Claims 73 and 77-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiyama et al in view of Lanham et al or Gomi et al and in view of Binnie et al (US 5837090) and Wiechowski et al (US 4244768).

Nishiyama et al discloses manufacturing a flow meter having a tube (flow tube) 5, a vibrators (drivers) 6a, 6b for the tube and pickups (pick offs) 7a-7d comprising providing a support base (base) 3, manifold (leg) 9 having a tube opening and support part (leg) 10 having a tube opening; inserting the flow tube into the tube openings of the legs and fixing the tube to the legs by welding.

As to claim 73, it would have been obvious to one of ordinary skill in the art to fix the tube 5 of the flow meter in the openings of the parallel legs 9, 10 by using an

adhesive instead of welding in view of the suggestion from Lanham et al or Gomi et al to use adhesive to attach components of a Coriolis flow meter together. Lanham et al, directed to manufacturing a flow meter having a driver and pick offs, suggests fixing using an adhesive instead of welding / brazing during manufacture of a flow meter so as to avoid microscopic cracks and thermal stresses generated by a brazing operation.

See page 1 line 21 to page 2 line 6, page 3 lines 19-20, page 17 lines 1-6. Gomi et al teaches attaching flow tube 4 and outer tube 5 at both ends by either welding or adhesive bonding. See col. 5 paragraphs 19 and 20. Gomi therefore instructs one of ordinary skill in the Coriolis flow meter art to use adhesive instead of welding to attach a flow tube to another component of a Coriolis flow meter. Lanham et al and Gomi are silent as to the details of the adhesive bonding. However, it would have been obvious to one of ordinary skill in the art to carry out the adhesive bonding suggested by Lanham et al or Gomi by directly introducing adhesive in each gap since Binnie et al and Weichowski et al, which like Nishiyama et al assemble a "tubular structure" in holes of "other structures" suggest inserting the tubular structure in the holes in the other structures and then introducing adhesive in each gap so that the gap is completely filled by the adhesive and the desired bond thereby obtained.

As to claim 77, it would have been obvious to hold the section of the flow tube between the two legs in an essentially straight configuration since Nishiyama et al teaches configuring the flow tube so as to extend straight between the legs as illustrated in figure 1.

As to claims 78, the limitation of using a fixture having first and second sections would have been obvious since Binnie et al (col. 4 lines 20-27) and Wiechowski et al (figure 12, col. 13 lines 3-4) suggest clamping the tubular structure during bonding in order to hold the tubular structure solidly and reliably in the desired position during bonding; it being noted that Wiechowski et al specifically illustrates such a clamp as having a first section 32 and a second section 34 (figure 12).

As to claims 79-81, it would have been obvious to one of ordinary skill in the art to provide the clamping means suggested by Binnie et al and Wiechowski et al with the claimed features since (a) as to claims 79-80, it is taken as well known / conventional per se to provide a clamping means for a tubular member with hole(s) so that a screw may pass through the hole so as hold the tubular member in the clamping means and (b) as to claim 81, it is taken as well known / conventional per se to secure a clamping means to component of a work while clamping other components of the work in order to maintain the clamping means in the desired position. The suggestion to use clamping means comes from the applied prior art instead of the official notice; it being emphasized that the use of the holes to align and attach a driver and pick-off is apparently not required by claims 79-80.

11) Claims 75-76 and 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiyama et al in view of Lanham et al or Gomi et al and in view of Binnie et al and Wiechowski et al as applied above and further in view of Adhesives Technology Handbook and optionally van der Pol (US 6336370).

As to claims 75-76, it would have been obvious to pretreat as claimed (i.e. etch flow tube as in claim 75, etch flow tube with sodium naphthalene as in claim 76) since Adhesives Technology Handbook suggests surface pretreating the surfaces to ensure successful bonding wherein surface pretreatment techniques include chemical treatment such as etching / treating with acetone and sodium naphthalene (page 87) and roughening (e.g. page 89). Adhesives Technology Handbook teaches preparing surface of PFA using sodium naphthalene. Although not required by claims 75-76, it would have been obvious to use PFA for Nishiyama et al's flow tube since van der Pol teaches that PFA may be used instead of metal for a flow tube in a flow meter (col. 4 lines 30-34).

As to claim 84, it would have been obvious to use cyanoacrylate adhesive since Adhesives Technology Handbook discloses cyanoacrylate adhesives as forming a strong bond between many materials without the need for heat (page 141).

12) Claims 82 and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiyama et al in view of Lanham et al or Gomi et al and in view of Binnie et al and Wiechowski et al as applied above and further of Van der Pol.

As to claims 82 and 83, it would have been obvious to one of ordinary skill in the art to use PTFE or PFA for Nishiyama et al's flow tube since Van der Pol suggests using PTFE or PFA as an alternative to metal for a flow tube of a Coriolis mass flow meter.

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As to claims 85-87, it would have been obvious to one of ordinary skill in the art to align and attach the driver and pickoff to the tube in Nishiyama et al's Coriolis flow meter using adhesive since (1) Nishiyama teaches arranging the driver and pickoff on the flow tube and (2) Cage '827, also directed to a Coriolis flow meter, suggests attaching such components on the tube using adhesive (co. 7 lines 20-50).

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As to claims 88 and 89, it would have been obvious to one of ordinary skill in the art to test as claimed in view of Cage '060's suggestion to test a Coriolis flow meter by a process including vibrating the flow meter, measuring the vibration and adjusting masses so as to balance the flow meter.

15) Claim 90 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiyama et al in view of Lanham et al or Gomi et al and in view of Binnie et al and Wiechowski et al as applied above and further of Japan '709 (JP 5-26709) and McLaughlin (US 3352960).

As to claim 90, it would have been obvious to one of ordinary skill in the art to use a plastic tube as the flow tube in Nishiyama et al and manufacture the plastic flow tube as claimed in view of (1) Japan '709's suggestion to use a plastic flow tube in a Coriolis flow meter (this plastic tube like the tube in Nishiyama et al being bent), (2) McLaughlin's teaching to extrude a straight tube and then heat and bend the straight

tube to form a bent plastic tube and (3) it is taken as well known / conventional per se in the extrusion art to pass an extruded tube through a cooling region while holding the tube, for example with pair(s) of rollers, so as to form a straight plastic tube.

Allowable Subject Matter

16) Claims 79-81 would be allowable if (1) rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims and (2) the subject matter of claims 85 is added to claim 79.

Scrantom et al, directed to method of applying terminations to ceramic bodies, shows the use of apertures and alignment means to align components in a desired manner. However, there is no motivation in the prior art of record including Scrantom and Cage '827, to further modify Nishiyama et al, Lanham et al / Gomi et al, Binnie et al and Wiechowski et al so as to arrive at the above identified allowable subject matter.

Remarks

17) Applicant's arguments with respect to claims 73-90 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed 5-17-04 have been fully considered but they are not persuasive.

Applicant argues that Lanham cannot be used as prior art for a 103 rejection since both Lanham and the current application were, at the time the invention of the current application was made, owned by the same entity. Applicant's argument is not persuasive since Lanham et al remains available as prior art. The publication date

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(9-7-01) of Lanham et al is before the filing date (11-26-01) of the present application.

Lanham et al therefore is available as prior art under 35 USC 102(a). Applicant's reliance on the prior art exclusion under 35 USC 103(c) is inapplicable in the present factual situation since 102(e) prior art but not 102(a) prior art may be excluded under 35 USC 103(c).

The publication date of Lanham et al is less than three months before the filing date of this application. In order to expedite prosecution, Gomi et al (newly cited) is applied in the alternative to Lanham et al in the event that applicant removes Lanham et al as prior art for example by an appropriate 131 declaration. The application of Gomi et al was not necessitated by amendment and as such this action is non-final.

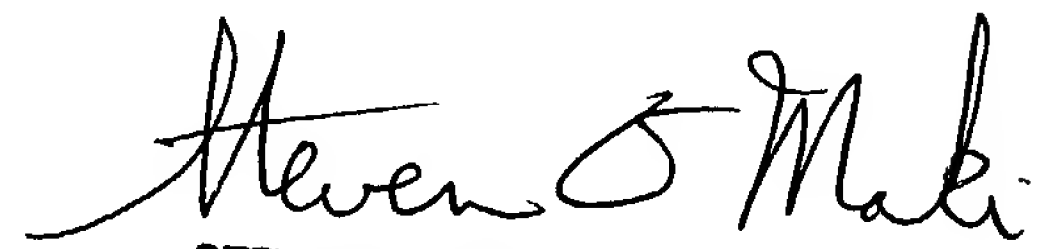
Hopkinson (US 5261284) is cited of interest for disclosing using an adhesive to attach a sleeve to an end plate to form an enclosure of a Coriolis flow meter.

18) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on (571) 272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Steven D. Maki
August 6, 2004


STEVEN D. MAKI
PRIMARY EXAMINER
~~GROUP 1300~~
AV 1733
8-6-04